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CLAIMS

- 1. A rare earth zeolite Y, wherein said zeolite has an intracrystalline rare earth content of 4-15 wt% on the basis of RE₂O₃, a unit cell constant of 2.450-2.458 nm, a differential thermal collapsed temperature of 1000-1056°C, and a unit cell size above 2.436 nm under an aging condition of 800°C/17 hr, 100% steam.
- 2. The zeolite Y according to claim 1, wherein the content of the intracrystalline rare earth on the basis of RE_2O_3 is 6-12 wt%, the unit cell constant is 2.452-2.456 nm, the silica to alumina ratio is 8.3-8.8, and the content of sodium oxide is less than 1.0 wt%.
- 3. The zeolite Y according to claim 1, wherein the content of sodium oxide in said zeolite is less than 0.5 wt%.
- 4. A process for preparing the rare earth zeolite Y comprising treating rare earth-containing zeolite Y with gaseous silicon tetrachloride.
- 5. The process according to claim 4 comprising drying the rare earth-containing zeolite Y to a water content of less than 10 wt%, introducing gaseous silicon tetrachloride carried by dry air in a silicon tetrachloride to zeolite Y weight ratio of 0.1-0.9:1, reacting at a temperature of 150-600°C for 10 min to 6 h, purging with dry air for 5min to 2 hr, and washing with de-cationized water.
- 6. The process according to claim 5, wherein said rare earth zeolite Y is selected from the group of the commercial products of REY,

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REHY, or the product derived from NaY exchanged by rare earth, with or without drying.

- 7. The process according to claim 6, wherein the content of the rare earth in said commercial product REHY on the basis of RE₂O₃ is 6-14 wt%, and the content of Na₂O is higher than 4 wt%.
- 8. The process according to claim 6, wherein the content of the rare earth in said commercial product REY on the basis of RE₂O₃ is 10-20 wt%, and the content of Na₂O is higher than 2 wt%.
- 9. The process according to claim 6, wherein the rare earth exchanged zeolite Y is produced by a process comprising: the zeolite NaY having a silica to alumina ratio higher than 3.5 is exchanged with an aqueous solution of rare earth chloride for 30-60 min in a weight ratio of NaY:RECl₃:H₂O = 1:0.1-0.25:5-15 under conditions of pH>3.5 and a temperature of 80-95°C.
- 15 10. The process according to claim 5, wherein the water content in said rare earth-containing zeolite Y after drying is less than 5 wt%.
 - 11. The process according to claim 5, wherein said reaction temperature is 200-500°C.
- 12. A rare earth zeolite Y, wherein said zeolite, after a treating process which includes reacting with gaseous silicon tetrachloride, has a unit cell size above 2.436 nm under aging condition of 800°C/17 hr, 100% steam.

13. The rare earth zeolite Y according to claim 12 having a silica to alumina ratio of no less than 8.3 and a sodium oxide content of less than 1.0 wt%, wherein the silica to alumina ratio is calculated by the following formula:

5 SiO₂/Al₂O₃ =
$$\frac{(2.5858 - a_0)}{(a_0 - 2.4191)} \times 2$$

Wherein a_0 is the unit cell constant of zeolite measured by X-ray diffraction method.

14. The rare earth zeolite Y according to claim 13, wherein the silica to alumina ratio of is no more than 8.8.

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